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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/550,539	Applicant(s) KOMMA ET AL.	
	Examiner LIXI CHOW	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11,13-17,19-27,29 and 30 is/are rejected.
- 7) ☒ Claim(s) 2,12,18 and 28 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figures 10-15 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 6-11 and 22-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6-10 and 22-26 each recites the limitation "said third slice level voltage". There is insufficient antecedent basis for this limitation in the claim when the claim is depended from claim 1 or claim 17. For example, claim 6 depend from claim 1 or 2; when claim 6 is depended from claim 1, there is insufficient antecedent basis for the limitation 'said third slice level voltage'.

Claims 11 and 27 each recites the limitation "said recording layers" in line 7. There is insufficient antecedent basis for this limitation in the claim. Claim 1 only specifies that the recording medium is either a single-layered recording surface or a plurality of multi-layered recording surfaces. It is not clear what "said recording layers" is referring to.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 29 and 30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 29 is drawn to a "program" *per se*, therefore, fail(s) to fall within a statutory category of invention.

A claim directed to a program itself is non-statutory because it is not:

A process occurring as a result of executing the program, or

A machine programmed to operate in accordance with the program, or

A manufacture structurally and functionally interconnected with the program in a manner which enable the program to act as a computer component and realize its functionality, or

A composition of matter.

See MPEP § 2106.01. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other

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claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

7. Claim 30 is drawn to a computer readable medium having stored thereon a computer program, where the computer readable medium as defined in the specification on page 52, lines 15-18 can be a signal or wave; therefore, fail(s) to fall within a statutory category of invention.

Although Applicant deleted the paragraph stating that the "transmission medium includes a transmission mechanism such as the Internet, light, radio wave, sound wave, etc" in the preliminary amendment filed 9/22/05; however, in the specification, there is also paragraphs state "Furthermore, the present invention may also be a medium carrying a program for causing a computer to execute the functions of the whole or part of the above described optical pickup driving apparatus of the present invention and can be a computer-readable medium, the program read from which executes the above described functions in cooperation with the computer (see page 51, lines 19-25); and "Furthermore, a mode of use of the program of the present invention may be also be a mode in which the program is transmitted through a transmission medium, read

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by a computer and operates in cooperation with the computer” (see page 52, lines 15-18). Based on the above mentioned paragraphs in pages 51 and 52, the recording medium of claim 30 can still includes a signal or a wave carrying a program.

A claim directed to a computer readable medium having stored thereon a computer program, where the computer readable medium as defined in the specification can be a signal or carrier wave or paper, covers a signal or carrier wave or paper which are non-statutory as noted, *infra*.

A claim directed to a computer program itself or signal or carrier wave is non-statutory because it is not:

A process occurring as a result of executing the program, or

A machine programmed to operate in accordance with the program, or

A manufacture structurally and functionally interconnected with the program in a manner which enable the program to act as a computer component and realize its functionality, or

A composition of matter.

A claim directed to a paper having thereon a computer program is non-statutory, because it covers printed matter which is non-statutory. It is not until the program is converted into an electronic form to be read and executed by the processor that it becomes functional descriptive material. There is no functional relationship between the paper and the computer program (see *In re Gulack*, 217 USPQ 401, *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed.Cir.1994)). The program as disclosed is merely printed on the paper, hence the program is merely non-functional descriptive material, therefor, the claimed paper with a computer program printed on

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it is non-statutory. See *Ex parte S*, 25 JPOS 904, *Ex parte Glenn*, 155 USPQ 42, *In re Lockert*, 65 F.2d 159, 17 USPQ 515.

See MPEP § 2106.01. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 3-8, 14, 17, 19-24, 29 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Takeya et al. (US 2001/0008506; hereafter Takeya).

Regarding claim 1:

Takeya discloses an optical pickup driving apparatus (see Fig. 1) for focusing an optical spot on a single-layer recording surface or a plurality of multi-layered recording surfaces of an optical information recording medium, comprising:

moving means of moving an objective lens for focusing said optical spot on said recording surface of said optical information recording medium in a direction of the optical axis of said optical spot (see Fig. 1, element 22 and Fig. 1B, the focus drive signal); and

control means of controlling said moving means based on a voltage of a focus error signal based on reflected light from said optical spot (see Fig. 1, element 38),

wherein said control means controls said moving means so that said moving means moves said objective lens toward said recording surface (see Fig. 3A, when $N=1$, and Fig. 5, step S6), and when said control means detects that the voltage of said focus error signal has reached a first slice level voltage corresponding to displacement of predetermined magnitude from a reference potential (see Fig. 5, step S7; TH corresponds to the first slice level voltage), said moving means moves said objective lens toward said recording surface by a maximum of an upper limit of a predetermined amount of movement (see Fig. 3A, the distance moved during T1 is a maximum of an upper limit of a predetermined amount of movement), and when the amount of movement of said objective lens has reached said predetermined amount of movement, said moving means moves said objective lens away from said recording surface (see Fig. 3A, when $N=2$, and Fig. 5, step S12), and

when said control means detects that said objective lens has reached a second slice level voltage corresponding to displacement of predetermined magnitude from the reference potential for the period of said backward movement (see Fig. 5, step S13; TH at step S13 corresponds to the second slice level voltage), said control means controls beam spot positioning so as to focus the optical spot (see Fig. 6, step S66 and par. [0122]).

Regarding claim 3:

Takeya discloses the optical pickup driving apparatus according to claim 1, wherein the voltage of said focus error signal alters in positive and negative directions with respect to said reference potential according to the movement of said objective lens (see Fig. 3A, a reference potential is the midpoint of the max amplitude or the zero point of the FE signal), and

said control means detects either a voltage higher or lower than said reference potential as said first slice level voltage (see Fig. 3B; TH level is either higher or lower than reference potential).

Regarding claim 4:

Takeya discloses the optical pickup driving apparatus according to claim 3, wherein said control means uses the voltage higher or lower than said reference potential as said first slice level voltage, whichever is detected first (see Fig. 3B, the first TH detected is higher than reference potential).

Regarding claim 5:

Takeya discloses the optical pickup driving apparatus according to claim 1, wherein the voltage of said focus error signal fluctuates in positive and negative directions with respect to said reference potential according to the movement of said objective lens, and said control means

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detects both a voltage higher and lower than said reference potential as said first slice level voltage (see Figs. 3A and 3B; during T1, TH level is both a voltage higher and lower than the reference potential).

Regarding claim 6:

Takeya discloses the optical pickup driving apparatus according to claim 1, wherein said control means detects either a voltage higher or lower than said reference potential as said second slice level voltage or third slice level voltage (see Fig. 3A, during T2, TH level is either higher or lower than the reference potential).

Regarding claim 7:

Takeya discloses the optical pickup driving apparatus according to claim 6, wherein said control means uses the voltage higher or lower than said reference potential as said second slice level voltage or said third slice level voltage, whichever is detected first (see Fig. 3B; the first TH detected during T2 is a voltage lower than the reference potential).

Regarding claim 8:

Takeya discloses the optical pickup driving apparatus according to claim 1, wherein the magnitudes of displacement of said first slice level voltage, said second slice level voltage and said third slice level voltage from said reference potential are substantially the same (see Fig. 3B).

Regarding claim 14:

Takeya discloses an optical information reproducing apparatus provided with means of reading information recorded in an optical information recording medium, said reading means using the

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optical pickup driving apparatus according to claim 1 (see Fig. 1; elements 23, 45 and 46 correspond to the means of reading information).

Regarding claims 17 and 19-24:

Claims 17 and 19-24 recite similar limitations as in claims 1 and 3-8, respectively.

Therefore, claims 17 and 19-24 are rejected under the same reasons set forth in claims 1 and 3-8, respectively.

Regarding claim 29:

Takeya discloses a program for causing computer to function as control means of controlling said moving means based on voltage of a focus error signal based on reflected light from said optical spot of the optical pickup driving apparatus according to claim 1 (see Fig. 1 and Fig. 5; a program is stored in the CPU to carry out the steps in Fig. 5).

Regarding claim 30:

Takeya discloses a recording medium carrying the program according to claim 29, said recording medium being process able by a computer (the CPU shown in Fig. 1 includes a memory which stores the instruction; the memory is a recording medium).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al. (US 2001/0008506) in view of Kitani et al. (US 2003/0151991; hereafter Kitani).

Regarding claim 13:

Takeya discloses all the features in claim 1; however, Takeya fails to mention whether the control means is formed on an integrated circuit.

On the other hand, Kitani discloses an optical pickup driving apparatus, comprising a control means that is formed on an integrated circuit (see Fig. 5; servo control unit corresponds to a control means, which is formed on an integrated circuit 20, see par. [0052]).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to form a control means on an integrated circuit as suggested by Kitani. One of ordinary skill in the art would have been motivated to do this because the performance of integrated circuit is high, and the small size of the circuit allows short traces which allow low power consumption.

Regarding claims 15 and 16:

Takeya fails to disclose an optical information recording apparatus.

However, Kitani discloses an optical information recording/reproducing apparatus provided with recording/reproducing means of recording and/or reproducing information in/from an optical information recording medium (see Fig. 5).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Takeya and Kitani. The reason being that the focusing control for multilayered recording medium can be realized during the recording process in addition to the reproducing process.

12. Claims 9, 10, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeya et al. (US 2001/0008506) in view of Kobayashi (US 7,145,842).

Regarding claims 9 and 10:

Takeya fails to disclose subject matter in claims 9 and 10; however, Kobayashi discloses that there is a difference in reflectivity between adjacent layers (see Fig. 6B; the first layer has a large reflectivity whereas the second layer has a small reflectivity).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the apparatus of Takeya to arrange the first slice level voltage and the second slice level voltage such that the magnitude of displacement of said first slice level voltage from said reference potential is greater than the magnitude of displacement of said second slice level voltage and said third slice level voltage from said reference potential, and wherein the magnitudes of displacement of said second slice level voltage and said third slice level voltage from said reference potential are substantially the same. One of ordinary skill in the art would have been motivated to do this because light can be accurately focused on the second layer where the reflectivity is small.

Regarding claims 25 and 26:

Claims 25 and 26 recite similar limitations as in claims 9 and 10. Therefore, claims 25 and 26 are rejected under the same reasons set forth in claims 9 and 10.

Allowable Subject Matter

13. Claims 2, 12, 18 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Although Takeya discloses all the features in claim 1, however, Takeya fails to detect a third slice level voltage before the amount of movement of said object lens reaches said

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predetermined amount of movement or detects that voltage of said focus error signal has reaches fourth a slice level voltage at which the displacement from said reference potential is greater than the displacement of said first slice level voltage from said reference potential.

No comment will be made in this Office Action regarding the allowability of claims 11 and 27 due to rejection under 112, second paragraph.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tsai (US 2003/0012109) is cited to show a related art reference that teaches moving the object lens in a backward direction to search for a focus position on a surface of a recording medium.

Abe et al. (US 6,246,646) is cited because Abe et al. disclose an optical focus control apparatus for multilayer optical recording medium.

Ichimura (US 7,031,233) shows a focus error signal corresponding to an objective lens moving in a forward direction and a backward direction.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIXI CHOW whose telephone number is (571)272-7571. The examiner can normally be reached on Mon-Fri, 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lixi Chow/

Examiner, Art Unit 2627